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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/700,060	11/09/2000	Toshiyuki Kondo	360842007000	9641

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EXAMINER

SIMONE, CATHERINE A

ART UNIT	PAPER NUMBER
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1772

DATE MAILED: 05/29/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/700,060

Applicant(s)

KONDO ET AL.

Examiner

Catherine Simone

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 27 March 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1, 2, 4-19, 21 and 23-39 is/are pending in the application.
- 4a) Of the above claim(s) 30-32 and 34-39 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1, 2, 4-19, 21, 23-29 and 33 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s) _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. **Claim 1** is rejected under 35 U.S.C. 103(a) as being unpatentable over Head et al. (4,730,428).

Head et al. discloses a fibre reinforced plastic roofing material comprising two or more sandwich structures butt joined in the widthwise direction (Fig. 1, #5) and comprises a pair of sheets comprising fibre reinforced plastic (Fig. 1, #2A and #2B) is arranged with a gap between them and a rib structure (Fig. 1, #3) which is integrally molded by a resin transfer molding process to the pair of sheets is interposed, wherein the fibre reinforced plastic includes a reinforcing fibre that is a glass fibre (see col. 3, lines 1-3). However, Head et al. fails to disclose the sandwich structure having a length of from 10 m to 25 m and a width of from 1.5 m to 3.5 m. Therefore, one of ordinary skill in the art would have to determine the length and width through routine experimentation depending on the desired end results as shown by Head et al. Thus, it would have been obvious to one of ordinary skill in the art at the time the applicant's invention was made to have the sandwich structure in Head et al. have a length of from 10 m to 25 m and a width of from 1.5 m to 3.5 m, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine

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skill in the art absence of showing unexpected results. *In re Boesch and Slaney*, 205 USPQ 215 (CCPA 1980).

3. **Claims 1-5, 10-19, 21, 23-25 and 33** are rejected under 35 U.S.C. 103(a) as being unpatentable over Rothman (4,078,348).

Rothman discloses a fibre reinforced plastic roofing material comprising two or more sandwich structures butt joined in the widthwise direction (Fig. 4) and comprises a pair of sheets comprising fibre reinforced plastic (Fig. 4, #22 and #24) is arranged with a gap between them and a rib structure (Fig. 4, #44)) which is integrally molded by a resin transfer molding process to the pair of sheets is interposed, wherein the fibre reinforced plastic includes a reinforcing fibre that is a glass fibre (see col. 3, lines 65-68). However, Rothman fails to disclose the sandwich structure having a length of from 10 m to 25 m and a width of from 1.5 m to 3.5 m. Therefore, one of ordinary skill in the art would have to determine the length and width through routine experimentation depending on the desired end results as shown by Rothman. Thus, it would have been obvious to one of ordinary skill in the art at the time the applicant's invention was made to have the sandwich structure in Rothman have a length of from 10 m to 25 m and a width of from 1.5 m to 3.5 m, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art absence of showing unexpected results. *In re Boesch and Slaney*, 205 USPQ 215 (CCPA 1980).

Regarding **claims 2, 4 and 16-18**, Rothman fails to disclose the pair of sheets having a thickness of from 2-10 mm, the rib having a thickness of from 1-3 mm, a ratio of the sandwich structure's overall thickness to each of the sheet's thickness in the range 5:1 to 25:1, the sandwich structure having a density that is no more than 100 kg/m² and a flexural rigidity of the

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sandwich structure that is at least $5 \times 10^7 \text{ kg/mm}^2$. Therefore, one of ordinary skill in the art would have to determine the specific thickness of the sheets and of the rib, the specific density of the sandwich structure, a ratio of the sandwich structure's overall thickness and the specific flexural rigidity through routine experimentation depending on the desired end results as shown by Rothman. Thus, it would have been obvious to one of ordinary skill in the art at the time the applicant's invention was made to have the pair of sheets have a thickness of from 2-10 mm and to have the rib have a thickness of from 1-3 mm and to have a ratio of the sandwich structure's overall thickness to each of the sheet's thickness in the range 5:1 to 25:1, the sandwich structure having a density that is no more than 100 kg/m^2 and a flexural rigidity of the sandwich structure that is at least $5 \times 10^7 \text{ kg/mm}^2$ in Rothman, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art absence of showing unexpected results. *In re Boesch and Slaney*, 205 USPQ 215 (CCPA 1980).

Regarding **claim 13**, Rothman fails to disclose at least one of the sheets having a jagged form in which there are alternatively arranged peaks and troughs. Normally, it is to be expected that a change in shape of the sheet would be an unpatentable modification. Under some circumstances, however, changes such as shape may impart patentability to a product if the particular shape claimed produces a new and unexpected result which is different in kind and not merely in degree from the results of the prior art. *In re Dailey et al*, 149 USPQ 47 CCPA 1966.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the applicant's invention was made to change the shape of at least one of the sheets in Rothman to have a jagged form in which there are alternatively arranged peaks and troughs. One skilled in

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the art would have been motivated to do so in order to form a fibre reinforced roofing material, since it has been held that the change in form or shape of at least one of the sheets would be an unpatentable modification absence of showing unexpected results.

Regarding **claim 5**, the reinforcing fibre of the fibre reinforced plastic inherently comprises a multiaxial woven material having a fibre direction at an angle of $45 \pm 10^\circ$ to the lengthwise direction of the rib structure (see col. 6, lines 15-17). Regarding **claim 10**, note the gap provides a uniform spacing along the lengthwise direction of the sheets (Fig. 5, #62 and #64). Regarding **claim 11**, note the gap provides a spacing that varies along the lengthwise direction of the sheets (Fig. 4, #22 and #24). Regarding **claim 12**, note there is arranged, in the gap, a filler (Fig. 4, #58) having a specific gravity lower than the specific gravity of each pair of sheets (see col. 8, lines 60-68). Regarding **claim 14**, note a rigid structure (Fig. 4, #44) arranged in the gap (Fig. 4, #58). Regarding **claim 15**, note a connecting member for connecting to another member is fitted to an outer face of at least one of the sheets (Fig. 4, #26). Regarding **claims 19**, note a cross sectional shape is flat sheet shaped (see col. 4, lines 59-61). Regarding **claim 21**, note a shape in the lengthwise direction that is a circular arc (see col. 4, lines 59-61). Regarding **claim 23**, note a gap is formed between adjacent fibre reinforced plastic roofing materials in the widthwise direction (Fig. 4, #50). Regarding **claim 25**, note at least one of the sheets comprises a matrix resin comprising phenolic resin (see col. 5, lines 58-61). Regarding **claim 33**, note there is a core material in the gap (Fig. 4, #58) and there are present, in the core material, through-holes running from an upper face to a lower face (see col. 8, lines 60-68).

4. **Claims 6, 7 and 29** are rejected under 35 U.S.C. 103(a) as being unpatentable over Rothman (4,078,348) in view of Shiraishi et al. (5,928,772).

Rothman discloses a fibre reinforced plastic roofing material comprising two or more sandwich structures butt joined in the widthwise direction (Fig. 4) and comprises a pair of sheets comprising fibre reinforced plastic (Fig. 4, #22 and #24) is arranged with a gap between them and a rib structure (Fig. 4, #44)) which is integrally molded by a resin transfer molding process to the pair of sheets is interposed, wherein the fibre reinforced plastic includes a reinforcing fibre that is a glass fibre (see col. 3, lines 65-68). However, Rothman fails to disclose the fibre reinforced plastic being carbon fibre reinforced plastic or a hybrid fibre reinforced plastic of carbon fibre and glass fibre. Shiraishi et al. teaches it is old and well-known in the analogous art to have a fibre reinforced plastic being of carbon fibre reinforced plastic or a hybrid fibre reinforced plastic of carbon fibre and glass fibre (see col. 2, lines 62-67) for the purpose of producing a fibre reinforced plastic roofing material which is superior to in its lightweight properties and rigidity.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the applicant's invention was made to have the fibre reinforced plastic in Rothman consist of either carbon fibre reinforced plastic or a hybrid fibre reinforced plastic of carbon fibre and glass fibre as suggested by Shiraishi et al. in order to produce a fibre reinforced plastic roofing material which is superior to in its lightweight properties and rigidity.

5. **Claims 8 and 9** are rejected under 35 U.S.C. 103(a) as being unpatentable over Rothman (4,078,348) in view of Johnson (3,920,871).

Rothman discloses a fibre reinforced plastic roofing material comprising two or more sandwich structures butt joined in the widthwise direction (Fig. 4) and comprises a pair of sheets comprising fibre reinforced plastic (Fig. 4, #22 and #24) is arranged with a gap between them

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and a rib structure (Fig. 4, #44)) which is integrally molded by a resin transfer molding process to the pair of sheets is interposed, wherein the fibre reinforced plastic includes a reinforcing fibre that is a glass fibre (see col. 3, lines 65-68). However, Rothman fails to disclose the reinforcing fibre being a woven material. Johnson teaches it is old and well-known in the art to have a reinforcing fibre be of a woven material (see col. 3, lines 52-59) for the purpose of producing a fibre reinforced plastic material having a strong, rigid and unitary structure.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the applicant's invention was made to have the reinforcing fibre in Rothman be a woven material as suggested by Johnson in order to produce a fibre reinforced plastic material having a strong, rigid, and unitary structure.

6. **Claim 24** is rejected under 35 U.S.C. 103(a) as being unpatentable over Rothman (4,078,348) in view of Bogner et al (4,361,613).

Rothman discloses a fibre reinforced plastic roofing material comprising two or more sandwich structures butt joined in the widthwise direction (Fig. 4) and comprises a pair of sheets comprising fibre reinforced plastic (Fig. 4, #22 and #24) is arranged with a gap between them and a rib structure (Fig. 4, #44)) which is integrally molded by a resin transfer molding process to the pair of sheets is interposed, wherein the fibre reinforced plastic includes a reinforcing fibre that is a glass fibre (see col. 3, lines 65-68). However, Rothman fails to disclose a linked region covered with a waterproof member. Bogner et al. teaches it is old and well-known in the analogous art to have a linked region covered with a waterproof member (see col. 2, lines 24-31) for the purpose of producing a fibre reinforced plastic roofing material comprising two or more sandwich structures butt joined in the widthwise direction.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the applicant's invention was made to have covered the linked region in Rothman with a waterproof member as suggested by Bogner et al. in order to produce a fibre reinforced plastic roofing material comprising two or more sandwich structures butt joined in the widthwise direction.

7. **Claims 26-28** are rejected under 35 U.S.C. 103(a) as being unpatentable over Rothman (4,078,348) in view of Bogner et al. (4,361,613).

Rothman discloses a fibre reinforced plastic roofing material comprising two or more sandwich structures butt joined in the widthwise direction (Fig. 4) and comprises a pair of sheets comprising fibre reinforced plastic (Fig. 4, #22 and #24) is arranged with a gap between them and a rib structure (Fig. 4, #44)) which is integrally molded by a resin transfer molding process to the pair of sheets is interposed, wherein the fibre reinforced plastic includes a reinforcing fibre that is a glass fibre (see col. 3, lines 65-68). However, Rothman fails to disclose a fire-resistant material provided at least on one face of the fibre reinforced plastic roofing material. Bogner et al. teaches it is old and well-known in the analogous art to have a fire resistant material provided on at least one face of a fibre reinforced plastic roofing material (see col. 2, lines 55-59) for the purpose of providing improved fire safety and emitting minimal amounts of smoke and other combustible materials under extreme conditions of heat and partial degradation.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the applicant's invention was made to have provided a fire resistant material on at least one face of the fibre reinforced plastic roofing material in Rothman as suggested by Bogner et al. in order to provide improved fire safety and emit minimal amounts of smoke and other combustible materials under extreme conditions of heat and partial degradation.

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Regarding **claims 27 and 28**, Bogner et al. fails to disclose the fire-resistant material containing either rock wool or phenolic foam. It would have been obvious to one of ordinary skill in the art at the time the applicant's invention was made to have the fire-resistant material in Bogner et al. contain either rock wool or phenolic foam, since it had been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use as a matter of obvious design choice and it would be entirely obvious absence of showing unexpected results. *In re Leshin*, 125 USPQ 416.

Response to Arguments

8. Applicant's arguments with respect to claims 1, 2, 4-19, 21, 23-29 and 33 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The patents are cited for further teachings of fibre reinforced plastic roofing materials similar to that instantly disclosed.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Catherine Simone whose telephone number is (703) 605-4297. The examiner can normally be reached on 9:30-6:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Harold Pyon can be reached on (703) 308-4251. The fax phone numbers for the

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organization where this application or proceeding is assigned are (703) 872-9310 for regular communications and (703) 872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.

CAS

Catherine Simone
Examiner
Art Unit 1772

May 19, 2003


HAROLD PYON
SUPERVISORY PATENT EXAMINER
1772

5/27/03